BERMUDA.

STAFF REPORTS

OF THE

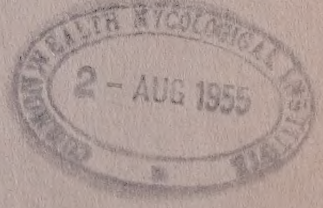
DEPARTMENT

OF

AGRICULTURE

FOR THE YEAR

1953



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REPORT OF THE ASSISTANT DIRECTOR OF AGRICULTURE FOR THE YEAR 1953.

The Director of Agriculture,

I have the honour to submit my report for the year 1953.

AGRICULTURAL STATION.

General.

The Agricultural Station continues to function efficiently as the centre of the Agricultural and Horticultural undertakings of the Colony. It is undoubtedly becoming more renowned as a Botanical and Ornamental Horticultural Institution than it is as an agricultural experimental Station. This is only to be expected since greater emphasis has been placed on Ornamental Horticulture during the past five years than hitherto. The work involved in reafforesting the Colony is mainly responsible for this trend of development. It is encouraging to report that excellent growth has been made by most of the new ornamental plantings of the last five years, which are now showing up to good advantage. These plantings serve as a wonderful example of what can be achieved and how quickly the landscape can be changed by careful planning and the proper use of the right material.

Although Bermuda was visited by a series of tornados in April and a severe hurricane in September, the Agricultural Station escaped with minor injuries. The tornados missed the Agricultural Station entirely, but the hurricane tore off several limbs from the large specimens of Ficus elastica and one tree of Calophyllum calaba was completely destroyed.

The main damage was the loss of the roof of No.2 Packing House, which in recent years has been used for the exhibition of poultry. The most devastating loss during the year under review was not due to the weather, but to fire. This fire, on the 10th July, completely destroyed the garage and workshop. Fortunately, most of the vehicles were not in the building at the time of the fire, but never-the-less, the damage was estimated at £5,000 being the value of the building, tools and spare parts destroyed.

Formal Garden in Front of Main Office.

In view of the visit of Her Majesty, Queen Elizabeth 11 to Bermuda on the 24th of November, it was decided to remodel this formal garden by changing the shape of some of the beds, and making a raised bed in the centre of the garden at the foot of the flag staff for carpet bedding schemes. For the visit of Her Majesty the design of the Crown and Royal Cipher was adopted as a carpet bedding project. Alternanthera Bettzchiana var. spathulata, popularly known as "Tea Plant" was used to form the Crown and Cipher. This was planted in a back ground of white Alyssum with an

edging of blue Ageratum, but unfortunately the Ageratum, although it grew extremely well, would not flower during the month of November. Otherwise the carpet bedding was a complete success and was the subject of numerous photographs. The flat beds were planted with red and white Zinnias, and yellow Chrysanthemums, all of which were in full bloom for the Royal Visit. The usual annual spring flowers dominated these beds during the early months of the year.

Plant Collections.

It is interesting to record, that of the seven Juniper species planted along the eastern side of the south bank in 1952, six of these are making favourable growth.

Juniperus chinensis pfitzeriana.	Growth slow but very sturdy. Dark green foliage.
" japonica sylvestris	Growth more rapid than the Bermuda Juniper. Very sturdy.
" virginiana	Growth rapid and very sturdy.
" excelsa stricta	Plants in sheltered positions are growing reasonably well.
" conferta	Growth slow. Dark green foliage.
" silicicola	Growth fairly rapid in sheltered positions.
" communis depressa plumosa	Growth very poor.
Retinospora squamosa viechii	The initial growth was rapid, but the lower branches have died.

The most promising species are J.virginiana , J.chinensis pfitzeriana(a prostate type) and J.japonica sylvestris.

A collection of Casuarina species has been made. It was noticed that at least four species of Casuarina were being planted as C.equisetifolia. These have been sorted out and planted at the northern end of the Rose bank field. The species recognized are C.equisetifolia, C.torulosa, C.stricta and C.leptifolia.

Another group of Hibiscus varieties was planted at the south end of the Victory Orchard. These plants have grown extremely well.

The Oleander Hill continues to flourish, and now that the plants have grown into relatively large specimens, this section of the Station is very colourful during the flowering season. The Orchid collection was further embellished during the year by the addition of sixteen new species and varieties of Cyprepedium obtained from England. The Writer wishes to record the grateful thanks of the Department to the St.John College Garden, Cambridge, England, for the donation of four large Cyprepedium plants.

Citrus Orchard.

Approximately ninety per cent of the fruit in both orchards was lost during the hurricane on the 17th September. Soft Brown Scale and Rust mite were troublesome throughout the year despite the regular spraying programme. Tests have been made with Malathion as a control for Soft Brown Scale. At the time of reporting, it is felt that Malathion gives better control of Soft Brown Scale than Oil Emulsion, and is less harmful to the trees. Malathion is reported to be an effective control for certain mites; it is planned to make further tests with this insecticide during the coming year on Citrus Rust mite.

Rainfall.

The following monthly rainfall was recorded at the Agricultural Station for 1953.

January	3.77	inches
February	2.44	"
March	3.53	"
April	6.22	"
May	2.62	"
June	3.40	"
July	1.40	"
August	4.59	"
September	4.04	"
October	13.99	"
November	2.34	"
December	6.95	"
	55.29	"

FIELD EXPERIMENTS

Details of the field experiments will be found in the report of the Assistant Horticulturist.

PLANT PROPAGATION

This section of the report is fully covered by the report of the Reafforestation Officer.

PLANTING AND LANDSCAPING SCHEMES.

A detailed report has been submitted covering all the public planting schemes conducted by the Department of Agriculture for the five year period - January 1949 to December 1953. However, to complete the annual report, the actual planting carried out during 1953 is included here. About fourteen miles of roadside were planted with suitable trees, shrubs and palms under the Reafforestation Compulsory Powers Act, 1952. Three small parks were planted, namely, Long Beach, Warwick, an area of Government land west of Church Bay, Southampton, and on Government land at Blue Hole in Hamilton Parish. Planting was also undertaken at the Civil Airport following the completion of building operations. In addition to the above mentioned schemes, the old Government House Park in St.Georges was landscaped under the supervision of the Department for the St.Georges Corporation. For this scheme, labour was supplied from the Senior Training School, St.Georges.

Arbour Societies.

Several of the Arbour Societies applied for assistance during the year. The Department responded by supplying plants and labour for various schemes as, and when they were requested. A variety of trees were planted by the Arbour Societies to commemorate the Coronation of Her Majesty, Queen Elizabeth 11.

Hamilton Corporation.

The Hamilton Corporation continued their planting programme. Cedar Avenue was planted with *Juniperus silicicola* and *Tababuia pallida*.

Cedar Plantation.

It was reported in the Annual report for 1952, that most of the young *Juniperus bermudiana* trees planted at the Government Quarry, Harrington Sound, had died through the infestation of the juniper scale. This area was re-planted with another 300 trees of the same species. At the time of planting, the young trees were completely free from the juniper scale.

Planting to Commemorate the Coronation of Her Majesty Queen Elizabeth 11.

Many people took advantage of the plants offered free of charge by the Department of Agriculture

for planting during the year to commemorate the Coronation of Her Majesty, Queen Elizabeth 11. At least a dozen species were used for this purpose. It was considered more satisfactory to offer a variety of plants, so that the plants could be chosen for the site, to avoid planting tender plants in exposed positions.

SUPERVISION OF OTHER GOVERNMENT PROPERTIES.

Other Government properties under the supervision of the Department of Agriculture include Government House gardens, Bernard Park, The House of Assembly grounds, the Colonial Secretariat grounds and the small Park at Crow Lane, Paget, all of which were maintained in good condition. Special plantings of Autumn flowers were carried out at Government House for blooming at the time of the Royal Visit on the 24th November, 1953.

INSPECTION OF EASTER LILIES.

The first inspection of the lily fields took place during the last week of January, and the second inspection was carried out between the 15th and 30th of March. Fifty fields passed the final inspection, giving an area of 29.75 acres. During these inspections, it was observed, that while the growers took great care to properly rogue the fields from which the bulbs were to be offered for sale, the beds of stock plants received little attention in so far as rogueing is concerned. If their stock beds were rogued with the same thoroughness as is done in the case of the main fields, the incidence of yellow flat and mosaic diseases would be reduced very materially, throughout the lily fields, thereby saving money on expensive labour in planting diseased bulbs and removing these diseased plants during the growing season.

OTHER ACTIVITIES.

Advisory Visits.

Throughout the year, I made 50 advisory visits. The nature of the enquiries covered questions on citrus culture, landscape gardening and general horticulture.

Broadcasts.

Of the 12 monthly broadcasts by the Department of Agriculture during the year, I was responsible for the production of six.

Exhibition.

The Agricultural Exhibition was held on the 22nd, 23rd and 24th April, and the Citrus Growers Association Exhibition was held in January, both of which proved to be very successful ventures.

Although these exhibitions involve a great deal of extra work within the Department, it is felt that exhibitions of this nature are well worth encouraging.

Work Done While on Leave in the United Kingdom.

I was on leave of absence in the United Kingdom from 21st July to 24th October. While on leave I interviewed twenty eight applicants for forestry work in Bermuda.

Respectfully submitted,

Gordon R.Groves
Assistant Director of Agriculture.

19th March, 1954.

REPORT OF THE ACTING PLANT PATHOLOGIST FOR THE YEAR 1953.

To: The Director of Agriculture,

I have the honour to submit a report on the work done on plant pests, and other agricultural problems, during the year 1953.

GENERAL REVIEW.

As was the case in 1952, the general emphasis in connection with the work of the Acting Plant Pathologist has shifted from biological control to projects dealing more directly with agriculture. No rearing or liberation of predators, in an effort to control the juniper scale Carulaspis visci Shrank, has been carried out although some attention has been devoted to certain studies which have a bearing on the cedar problem. Careful check on the general condition of the cedar trees in all parts of the Island has been made periodically throughout the year and it is regrettable to have to report, that, even in Southampton and Sandys Parishes, the condition of these trees has definitely worsened. Deterioration is very evident even in areas where it was hoped some of the trees might survive. Such areas include the town of Somerset, Gibbs Hill, the Wyman Estate and, particularly, the valley back of Whale Bay.

The biological control of insects in Bermuda this year centred on the importation, rearing and liberation of various insect parasites and predators from California, Trinidad and Hawaii in an attempt to control such important and injurious species as the citrus mealybug, the long-tailed mealybugs, scale insects of various species, the canna lily skipper, the harlequin bug and others. This work was carried on in cooperation with the Commonwealth Institute of Biological Control, Ottawa, Canada.

Attention has been focused on certain problems confronting the lily growers, in particular, methods of correcting chlorosis, or yellowing, of the plants. Preliminary observations and studies have been carried out to devise a method for the control of weeds in lily fields.

Considerable time has been devoted to the study of a most serious, and comparatively new, insect attacking oleanders and certain other host plants, known as the green shield scale Pulvinaria psidii Mask. Attention has been focused on the life history, habits, distribution and control of this species.

The duties of the plant pathologist, during 1953, have been carried out by four different officers, namely, Mr. Arthur Kelsall, Mr. Walwyn Hughes, Mr. F.D. Bennett and the writer, all of whom served in a temporary

capacity, and for varying lengths of time, in this position. Mr.Kelsall reported for duty on April 15 and returned to Nova Scotia on June 15. Mr.Hughes returned from Cornell on the latter date and worked through until September 10. Mr.Bennett was temporarily transferred from Trinidad to Bermuda on September 11 and acted as plant pathologist until November 25. The writer served a five and a half months broken period - January 1 to April 15 and November 1 to December 31.

THE CEDAR PROBLEM.

Study of Resistant Cedars.

Late in 1952, a study was instigated in an effort to explain why a small number of cedars appeared to be resistant to the attack of the juniper scale. Single trees, and small groups of green trees, could be seen at many points throughout the Island which had retained their green, healthy appearance. This point seemed worthy of investigation.

As a preliminary step to this study, ten of the most perfect cedars that could be found were selected, tagged and photographed in colour. Scale counts were made on these and on ten badly injured trees. It was found that there were almost four times as many scales on the damaged trees as on the good. Each tree was studied carefully to learn if position, soil, nearby plants, sex, needle length, gland formation, topography or other environmental factors might have any bearing on the question. Needles from the resistant and susceptible trees were sent to the Division of Botany and Plant Pathology at Ottawa for sectioning. As complete a physical examination of the two types of trees as was possible under the circumstances was carried out.

In these studies only three differences were noted: (1) most of the resistant trees were male (70%), (2) the glands on the needles of the resistant trees were slightly shorter than on the susceptible and (3) there were more oil globules in the needle tissue of of resistant cedars than in needles from the injured trees.

The conclusion reached, following these studies, was that the factor, or factors, causing resistance to scale attack in certain cedars was not physical but probably lay in the field of chemistry. Possibly a greater concentration of waxes, gums, oils or fats in some trees made them more attractive, or otherwise, to the juniper scale when it was settling down on the needles.

During Mr.Kellsall's two months in Bermuda, he devoted considerable time to this study. Chemical analyses of needles and berries from resistant and susceptible trees were carried out in the laboratory. He found that when analyses of the needles were made there was little difference in the relative abundance of these materials in the different types of trees under study but

analyses of the berries showed that the ether extracts (resins, waxes, etc.,) were more abundant in the resistant trees than in the susceptible. This was particularly evident in berries of Juniperus silicicola, the most resistant species growing in Bermuda. Further work along this line is needed.

AGRICULTURAL PROBLEMS.

Yellowing (Chlorosis) of Lilies

In 1952, studies of yellowed lilies and soil carried out by officers in the Canadian Department of Agriculture indicated that the condition known as chlorosis was caused by lack of available iron in the soil. Accordingly, in January of 1953, an experiment was set up at Shelly Bay to learn if yellowing in the lilies could be corrected by providing iron in available form. In some plots this was sprayed on the plants, in others added to the soil.

In these experiments five materials were used, namely, iron sulphate, manganese sulphate and three proprietary materials containing iron known as Sequestrene NaFe, Ferro-green and Fritted Trace Elements. The two sulphates were sprayed on the yellowed lilies and the proprietary powders dusted on the soil and immediately raked in.

The results were most encouraging. Iron sulphate, manganese sulphate and Fritted Trace Elements were non-effective in this test. However, lilies treated with Sequestrene and Ferro-green reacted quickly. In the plots treated with Sequestrene an improvement was noticeable in two to three weeks and at the end of a month plants which were previously lemon-yellow had taken on a deep green colour. In the Ferro-green plots the colour change was just as complete but the reaction was somewhat slower. Treated plants bloomed normally and produced normal-sized bulbs.

Weed-Control in Lily Fields.

A small experiment was set up in November to test the effect of two herbicides, namely, 2,4-D and C M U on weeds in a patch of lilies planted near the Lane. These bulbs had been held in storage at the Agricultural Station for a period of approximately three months beyond the normal planting date.

The chemicals were applied but once, alone and in combination, at different strengths when the weeds first appeared but before the lilies had broken through the soil. One plot was given three rakings before the lilies had reached a size where injury would result from this operation.

Excellent control of the weeds was secured where 2,4-D and C M U were applied alone at high dosages. The most satisfactory control resulted in plots treated with 2,4-D at the rate of 2 pounds per acre and where C M U was used at 1 pound per acre. Three months after the lilies were planted, with no intervening cultivation, these plots were relatively free from weeds, whereas the lilies growing in the check plots were smothered by weed growth. A fair degree of control occurred in beds treated at lesser strength and in the plot which was raked.

Seven species of weeds were present in the plots but, unfortunately, the three worst weeds commonly found in lily fields, namely, purslane, oxalis and wild onion, did not appear. How these two herbicides will affect these "worst offenders" has yet to be proved.

Chemical Control of Harlequin Bug.

Two field experiments were carried out in which malathion was tested as a control for the harlequin bug. In one of these, the insecticide was applied by means of a three-gallon compressed air sprayer. The other was a large field test, using a power sprayer. In both instances turnip greens, supporting a very heavy infestation of the insect, were treated. Only one application was made.

The malathion was applied at the rate of 1½ pints to 100 gallons of water, on a bright day when the insects were up on the leaves feeding. Virtually 100% control of adults and nymphs resulted. No control of the eggs was secured.

Green Shield Scale.

Considerable time was devoted to a study of the biology and control of the green shield scale, Pulvinaria psidii Mask. A serious and relatively new insect attacking oleanders, citrus and many other trees and shrubs in Bermuda. In addition to weakening the plants on which it feeds, this insect secretes a honey dew that forms a suitable medium for the growth of a most unsightly black fungus known as sooty mould. Heavily infested plants look black and dingy, in contrast to the bright green of healthy trees and shrubs.

The green shield scale is now found over a wide area of the Island, as yet in more or less isolated and disconnected spots. It is much more abundant in the west than in the east and appears to be concentrated in the town of Somerset. Infested areas may be confined to a few bushes or may cover an acre or more. It attacks oleander, chiefly, but has been found on a fairly large range of trees and shrubs including citrus, ficus, pittosporum, fiddlewood, avocado pear and others.

A life history study of the green shield scale was carried out in the laboratory at a temperature of approximately 70 degrees F., to get a better idea of the

time of development. It was found that growth and development was relatively slow. Incubation of the eggs covered a period of 15 days. The period of nymphal development, that is the time of growth from egg hatching to the formation of adult, varied considerably with the individual from 83 days in the case of the most precocious to 144 days in the most backward nymph. From the original egg-mass used to start this life history study, 149 egg-masses were produced. These were laid over a period of two months. The average egg-mass contained 166 eggs. No male scales were encountered either in the laboratory rearing, or in the field. It would appear that the insect is parthenogenetic.

Early in the year, the writer noticed in an american journal an account of a new insecticide called malathion recommended for the control of scale insects, among others. Upon request, samples of malathion were donated by the manufacturers to the Department for test purposes. In March, an experiment was set up to test the effectiveness of this new material against the green shield scale. Malathion spray powder, at the rate of 6 pounds to 100 gallons of water was applied to a heavily infested oleander hedge on Gibbs Hill. One application killed 98 per cent of the scale, by actual count. The spray had little effect on the eggs, although it was noticed that a few of the young crawlers were killed when they came in contact with malathion on the egg-mass. A second application, a month after the initial one, and after all eggs had hatched, would probably give a complete clean-up of the scale.

Due to the very definite threat to the oleanders in Bermuda caused by the green shield scale, and the rapid build-up and spread of this insect, the writer feels very strongly that the Department of Agriculture should take immediate steps to at least check and, if possible, eradicate this insect. If the more heavily infested areas were sprayed twice with malathion, the foci of infestation could be eliminated and the spread of the scale greatly retarded. Unless this is done, it is felt that a wholesale epidemic will develop which very soon will cover the entire Island.

The Argentine Ant.

While present in Bermuda during the past summer, Dr.W.R.Thompson, Director of the Institute of Biological Control, noticed an unusual type of ant in the vicinity of "Waterville", Paget Parish. Specimens were forwarded to specialists in the United States Museum who identified it as the Argentine Ant, Iridomyrmex humilis Mayr. This was a new record for Bermuda. Scouting work carried out since that time has revealed this ant to be present in other parts of the Colony. Seven new place records have already been established.

Mediterranean Fruit Fly.

The following report, prepared by Mr.Walwyn Hughes after studying the Mediterranean fly, Ceratitis capitata Wield. in Bermuda during the summer months, gives a brief review of the present situation:

"The Mediterranean fruit fly population seems to be on the increase again this year. More than one thousand flies were collected from fruit material which had been placed in emergence boxes. Peaches and figs were particularly hard hit by the fruit fly. One collection of peaches from Hinsons Island, numbering about two dozen fruit, yielded over 400 fruit flies. The writer (Mr.Hughes) visited a property in Paget and adult fruit flies could be seen on every ripe fruit in the orchard".

BIOLOGICAL CONTROL.

(Mr.F.D.Bennett and Mr.Walwyn Hughes devoted almost their entire time to different phases of the study dealing with the biological control of insects in Bermuda. Only about one-third of the writer's time was taken up in this work.)

Biological Control of the Harlequin Bug.

In recent years the harlequin bug Murgantia histrionica Hahn. has caused serious losses to cruciferous crops in Bermuda. In the United States and Hawaii, an egg parasite Ooencyrtus johnsonii has assisted very greatly in holding this insect in check. Accordingly, in September arrangements were made to have shipments of the parasites forwarded to Bermuda from the Hawaiian Islands for rearing and release. During September and October, 6 such shipments were received. Some of these were immediately released and others retained for rearing in the laboratory.

A simple and very efficient method for propagating O.johnsonii under laboratory conditions was worked out by Mr.Bennett which has been utilized and continued to the end of the present year. During this period over 10,000 adults of this parasite have been released in fields infested by the harlequin bug. Limited recoveries have been made from eggs collected at different points of liberation, proving that the establishment of O.johnsonii in Bermuda is an accomplished fact.

Biological Control of the Canna Skipper.

The Canna skipper, or canna leaf-roller, Calpodes ethlius is a serious pest of these lilies in Bermuda. The caterpillar, by rolling and eating the leaves, causes the plant to take on a frayed and unsightly appearance. Two egg parasites, Ooencyrtus sp. and Trichogramma sp.and a larval parasite Elachertus meridionalis Crawf. assist greatly in holding this insect in check in the Island of Trinidad. During the summer and autumn, several shipments of these parasites, as well as parasitized eggs, were received from Trinidad and liberated in all Parishes of Bermuda where the canna skipper was abundant. By late November, Ooencyrtus had become established in all parishes west of, and including, Devonshire, and Trichogramma was present in the parishes of Devonshire, Paget and Warwick.

Parasite Introductions.

In addition to the four species listed above, introductions of insect parasites and predators have been received from California systematically throughout the entire year in an effort to control a variety of injurious species commonly found in Bermuda. These have been shipped from the Biological Control Laboratory, Fontana, California and liberated at points throughout the Colony where chances of becoming established appeared to be most hopeful. A detailed record has been kept of the numbers of insects in each shipment and the point of liberation. A summary of the shipments, by species, is given below.

Species	No. of Shipments	No. of Parasites
Allotropa sp.	38	28,000
Anagyrus fusciventris	19	4,300
Anarhopus sydneyensis	24	4,200
Pauridia peregrina	2	2,000
Ooencyrtus johnsonii	6	400
Stethorus picipes	1	150
Stethorus vagans	2	600
Leptomastidea abnormis	11	4,300
Metaphycus flavus	9	9,500
Metaphycus luteolus	15	22,000
Metaphycus stanleyi	6	8,000
Pseudaphycus sp.	11	5,300
Cryptolemus montrouzieri	2	600
	146	89,350

Parasite Recoveries.

Recoveries of the following introduced parasites and predators have been made in Bermuda during the year:

Parasite	Host	Country of Origin
Pauridia peregrina	Planococcus citri	California
Leptomastidea abnormis	" "	"
Cryptolemus montrouzieri	" "	"
Microbracon gelechiae	Phthorimaea operculella	"
Tetracnemus peregrinus	Pseudococcus longispinus	"
Angyrus fusciventris	" "	"
Ooencyrtus johnsonii	Murgantia histrionica	Hawaii
Ooencyrtus sp.	Calpodes ethlius	Trinidad
Trichogramma sp.	"	"

A New Record.

Early in November, Mr.Bennett forwarded to the United States Department of Agriculture, Washington, D.C., for determination, a parasite reared from eggs of the harlequin bug. This was identified by Dr.C.W.Muesebeck as Telenomus megacephalus Ashm. who stated that this was a new host record for the parasite, as well as a new parasite record for Bermuda.

MISCELLANEOUS

Fumigations.

Three fumigations were carried out during the year, two of these consisted of upholstered furniture infested with insects and in the third instance emergence boxes and rearing cages were treated to free them from insects and mites.

Inspections.

On 20 occasions plants and plant products were inspected either at the dock or at the laboratory. In several instances plants imported in soil were seized and destroyed. On one occasion a shipment of Christmas trees was released without inspection when a protest was lodged with customs officials by the Director of Agriculture.

Correspondence re Argentine Ant Control.

Correspondence was carried on with several entomologists in the States of California and Mississippi relative to the control of the Argentine Ant. It seemed wise to have a pool of the latest information available in case control measures might be necessary at some future date.

Insect Identification

On several occasions, insects were collected in Bermuda and forwarded for identification to specialists in the United States Department of Agriculture, and others. A list of these, too long to publish here, is available in the laboratory files. The assistance rendered by these experts is gratefully acknowledged.

EXTENSION.

Citrus Exhibition

An entomological exhibit was prepared and displayed at the Citrus Exhibition held on the Agricultural Station, January 8, 9 and 10. In this the green shield scale was featured and advice given regarding control. Different stages of the scale were on display, both on cut branches as well as under the microscope.

Field Meeting of Lily Growers.

A field meeting of the Bermuda lily growers was held on the property of Mr. A.W. West, Shelly Bay, Jan. 14 to discuss and demonstrate the results obtained in an experiment designed to correct chlorosis, or "yellowing", of lilies.

Publications.

Department of Agriculture Bulletin No.27, "A Method of Rearing the Oleander Scale, *Pseudaulacaspis pentagona* Targ. on Potato Tubers" was published in February.

Early in March an article appeared in the Sunday Edition of the"Royal Gazette" outlining in some detail the method of correcting chlorosis in lilies through the addition to the soil of iron in available form.

Advice to Growers

Every effort has been made to give prompt and helpful service to commercial growers and gardeners seeking advice relative to the control of insects or diseases attacking their plants.Enquiries have been received by letter, over the telephone and through personal visits to the laboratory. Where necessary, visits have been made to the properties concerned in order that accurate identification of pests or plant injury may be made. It is gratifying to be able to report that this service appears to be appreciated which is attested to by the growing demand for assistance and advice.

Respectfully submitted,

Alan G.Dustan,
Acting Plant Pathologist.

REPORT OF THE GOVERNMENT VETERINARY OFFICER. FOR THE YEAR 1953.

To: The Director of Agriculture,

I have the honour to submit my report for the year 1953.

TUBERCULOSIS CONTROL.

Control of Tuberculosis in these Islands is by the test and slaughter method, using in general, the intra-dermal tuberculin test which on occasions is supplemented by the subcutaneous or temperature test. This method of control has proved very successful, resulting in the reduction of this disease to only one foci of infection located in one isolated herd with a long history of reactors.

During 1953, 1,318 tuberculin tests were carried out and only four (4) reactors found.

BRUCELLOSIS (BANG'S DISEASE) CONTROL.

The policy followed in this instance is that of calfhood vaccination which has in the last two years been supplemented by the vaccination of adult cattle in some herds. This adult vaccination has stopped abortion and breeding problems in several herds which had previously given trouble for a considerable time.

During 1953, sixty five (65) heifers and three large herds comprising one hundred and forty (140) adult cattle were vaccinated.

Only four persons owning cows privately requested that their animals be blood tested during the year.

HOG CHOLERA CONTROL

I continued to use a modified live virus vaccine in the control of hog cholera with apparently marked success as on investigating six (6) suspected occurences of hog cholera in 1953, only on one occasion was cholera diagnosed, this was in a herd being fed on swill. The promp use of a little serum and immediate vaccination of all hogs on the premises, those on neighbouring farms and also the vaccination of hogs owned by the larger pig breeders, brought the disease under control with the loss of only eight or nine pigs.

It is hoped by vaccinating much earlier this year, to exclude this infection altogether.

ANIMALS ADMITTED.

Only animals carrying adequate certificates of health from competant persons in the country of origin were admitted. In the cases where such certificates were missing, entry was refused or quarantine imposed. However, as there is no proper quarantine station, the latter procedure is seldom followed.

The following livestock were admitted in 1953:

Horses	21	
Cattle	4	
Donkeys	1	
Dogs	127	
Cats	15	
Baby chicks	1004	cartons
Grown chickens	16	
Ducklings	8	cartons
Turkey poults	22	"
Rabbits	6	

Fancy Birds	
Parrots	9 private - 30 for Aquarium
Parakeets	1 carton and 9 single
Canaries	1 " and 4 single
Finches	1
Alligators	1 (minute)

In transit:

1 fighting cock - kept at Station for 2 days.

IMPROVEMENT OF LIVESTOCK.

During 1953, four purebred Guernsey heifers in calf were imported by one Dairy Farmer to improve the Guernsey strain in his herd.

Quite a number of outstanding poultry were imported to improve this type of livestock.

CERTIFICATES ISSUED.

During 1953, nine (9) certificates for the export of animals were issued to persons requiring government certificates for authorities of the country to which they were proceeding. In most cases these certificates were issued by the private practitioners.

GOVERNMENT HOUSE HORSES.

During 1953, forty five (45) calls were made at the Government House stables to examine the horses and to make sure that everything was in order.

Early in the year the mare "Black Bess" strained the tendon in her front leg and went lame. Immediately paliative measures were taken and she was able to appear at those functions where horses were required. However, these were

only temporary measures and when it was apparent that it would be possible to lay her up she was blistered on April 25th and given twelve weeks rest. This treatment proved most successful and the tendon has not since bothered her.

During the visit of Her Majesty the Queen this team was used to transport the Royal Couple on a short drive. The team behaved in a most excellent manner.

POLICE CALLS.

The Police only put in one call to me in 1953, This was early on a Sunday morning and related to a goat that had been attacked by dogs and left in the road near Hillhouse in Hamilton.

Examination revealed that the goat was seriously injured. The S.P.C.A. Inspector having arrived prior to my arrival, the goat was taken to Dr.E.W.Prescotts hospital, where it was definately established that its neck was broken and had to be destroyed.

POLICE DOGS.

Three examinations of the police dogs were made.

S.P.C.A.

On six (6) occasions I was called in by the S.P.C.A. Inspector to examine animals.

In most instances a word of advice was sufficient but in one case of a horse, it was necessary to take court action resulting in the convicting of both owner and care-taker with the latter being forbidden to own a horse for some years.

PRISON FARM.

Seven visits were made to H.M.Prison Farm to see sick or suspected sick animals and to give advice.

My help was also requested when it was thought that the livestock would be disposed of. Appraisal was made and a type of tender suggested. This was however dropped and the livestock remained on the farm.

T.C.B.

On seven (7) occasions I attended at the Transport Control Board examination centre to examine horses to be used in public carriages.

ANIMALS DESTROYED.

Either through accidents or at the owners request, I destroyed six (6) horses during the year — each case being of an emergency nature.

AGRICULTURAL EXHIBITION.

No accidents occurred during the Agricultural Exhibition and my professional services were only required to examine dogs for admittance to the Dog Show.

OTHER DISEASES.

A suspected case of Rabies was investigated at the request of the Director of Medical and Health Services, the dog being captured and detained at the Animal Refuge. No evidence of Rabies was seen, the dog remaining healthy with the exception of an ear canker which was undoubtedly the cause of its bad disposition. After being detained for the prescribed period, it was humanely destroyed at the owners request.

"Foot Rot" in cattle was quite prevalent at certain times of the year and particularly on two or three farms.

The use of Sodium sulfa-pyridine intravenously cleared it up in most instances. However, its prevention was aimed at and recent experiments in the U.S.A. with Hi.-Amine Compound (Allied Laboratories Inc.) show much promise in this direction. As a result of their experiments, this Department has obtained a trial sample of this material which is now being used to see if it will be effective in Bermuda.

OTHER CALLS.

On three occasions I attended animals in emergency cases when other Veterinary assistance was not available. On six occasions I did work for the two private Veterinary Practitioners.

MEAT INSPECTION.

Date	Cows	Bulls	Calves	Hogs	Goats
January	15	1	35	112	-
February	12	4	23	120	-
March	22	1	45	198	-
April	14	-	27	160	4
May	13	1	30	167	-
June	11	3	29	137	2
July	8	1	24	106	2
August	11	1	24	107	1
September	16	-	32	148	3
October	16	1	36	189	2
November	15	1	25	150	1
December	14	3	38	474	6
	167	17	368	2,068	21

Meat condemned

Cattle.
2 cows due to emaciation and widespread abscesses
1 cow due to pneumonia and pleuresy (active)
3 cow lungs due to T.B.lesions in Reactor cows
2 cow livers due to abscesses
2 cow plucks due to fibrotic changes.

Hogs
60 plucks due to fibrotic changes; e.g. post pneumonia.
16 heads due to necrotic abscesses in the Submaxillary glands.
1 head due to wounds.

Goats
1 carcass, killed by dog but starting to putrify before being skinned.

Imported Meats Inspected on Request.

April 15th 6 ctns shipped chill room instead of freezer, alright.
May 13th Johnson and Cooper re-steak-certified unfit by King Edward Memorial Hospital Lab.
July 7th Tucker's Commission House, 6 cases) Certified unfit.
Princess Hotel 12 ctns)
Aug 17th Hamburger - Weldon Co., 30 lbs. condemned.

MILK.

The inspection of milk was of three fold operation, consisting of : (1) Inspection of the Dairy Farm, (2) Inspection of the Processing or Pasteurization Plant, (3) the collection of samples of both raw and pasteurized milk and submitting these to the Laboratory for analysis.

Operation one, carried on continuously throughout the year, indicated a marked improvement in most instances despite the fact that many farmers are on rented properties with no long lease. Under these conditions it is not reasonable to expect them to spend large sums of money on building improvements.

The farmer-producer in 1953 produced 1,984,881 quarts of milk which is 165,013 quarts above the 1952 level, a record for the Colony. For this milk, £132,571.19.11 was paid out to these producers.

It is interesting to report that while the total number of producers was reduced by two, the production of milk increased. This reduction of producers was brought about by the amalgamation of two producers and another dairy farmer selling the majority of his cows which were absorbed into various herds.

Operation two also was carried out continuously at the three pasteurizing plants operation. This inspection indicated that one operator was putting a portion of his returns into keeping the plant as up to date as possible.

The addition of a holding vat at this plant to hold cold raw milk together with the delivery of all milk once a day has greatly increased the quality of his milk especially during the summer months. The other two operators have done little, if anything, to improve their conditions although one has made application, to build a completely new plant in 1954.

Operation three was generally carried out at the processing plant with samples of both raw and pasteurized milk being submitted to the King Edward Memorial Hospital Laboratory for analysis. Due to pressure of work, it was not possible to have as many samples analysed as we would have liked, but a tentative change of plans for 1954 promises a much wider laboratory check on both raw and pasteurized milk.

Respectfully submitted

Edward R.Earl
Government Veterinary Officer.

26th January, 1954.

REPORT OF THE AGRICULTURAL ASSISTANT FOR THE YEAR 1953.

To: The Director of Agriculture,

I have the honour to submit my report for the year 1953.

Assistance to Farmers and Citrus Growers.

Cultivation of Land

Only 97 acres of land were cultivated during 1953 compared with 166 acres for the previous year. This was due to a fire which broke out at the garage on the 10th of July. The tractor used for ploughing etc., was destroyed in this fire.

Spraying Service

The Department's spraying units were busy during the year spraying for farmers, citrus growers and estate owners. The farmers did very little spraying for the late crop of potatoes. A small unit was operated to assist with the citrus spraying, which reduced the spraying time very considerably. During the year under report, some 4,060 spraying hours were worked as under: ground crops, 641 hours, citrus trees, 3,079 hours and ornamentals, 340 hours.

Citrus Culture

The condition of the trees throughout the year was generally good. The following spraying programme was carried out: January through February, nutritional spray, followed with oil spray. During May through June, the sulphur spray which was to have followed was cancelled.

Again this year, over 75% of the citrus crop was affected with Rust Mite. Soft Brown and Green Shield Scale are the two major problems affecting the citrus trees at the present time. To try to control these scales,

an experimental spraying was carried out in the Victory Orchard with a new spray called Malathion (50%) . As a result of this experiment, which was very effective (resulting in an 80% kill of the scale) it was decided to use this spray for the first spraying of 1954 to replace the oil emulsion spray.

Brown Rot Gummosis, Foot Rot and Citrus Bark Borers were found in several orchards, mostly on lemons and limes. These were successfully treated with potassium permanganate.

Inspections

Two inspections were carried out during the year, one in January and one in October just after hurricane "Edna" to determine the amount of damage caused by the hurricane. While the damage to trees was slight, it was estimated that well over 75% of the crop was lost. A report was posted to all members on the condition of their trees, with recommendations for pruning, fertilizing and cleaning.

Membership

Under new arrangements with the Bermuda Citrus Growers Association, the Department undertook to send out bills for the membership fees and spraying charges, to date, this has worked out very satisfactorily.

Spray and Materials

The following amount of spray and materials were used during the year:

Sprays	
Nutritional Spray	24,000 gallons
Oil Emulsion Spray	43,000 gallons
Materials	
Nutritional Powder	2,780 pounds
Oil Emulsion	432 gallons

Fertilizer

During the year, a balanced fertilizer was mixed and bagged in 100 lb. units, and sold to the citrus growers at the rate of 36/- per cwt. 80 bags of balanced citrus fertilizer was purchased from Messrs. H. and K. Richardson. This type of fertilizer is the same as that used by the citrus growers of Florida, with the following analysis, 4% Nitrogen, 6% Phosphoric Acid, 8% Soluble Potash, 4% Magnesium and 2% Manganese and ½% Copper. The importation of this fertilizer is a great saver in both time and labour.

Citrus Nursery

A start has been made on the establishment of a citrus nursery at the Station. At the present time, there are several thousand sour orange seedlings ready to be set out, these will be transplanted early in the new year.

Citrus Exhibition

The Annual Citrus Exhibition was held on the 8th, 9th and 10th of January in the Arts and Crafts Building at the Agricultural Station. The Exhibition was opened by His Excellency the Governor at 2.30 p.m. on the 9th. A large crowd attended on the opening day and many favourable comments were passed on the Pyrimid of Fruit, which was exhibited by the Department.

Leave

I was on foreign leave from August 3rd, to September 26th, 1953.

Respectfully submitted

C.V.S.Early
Agricultural Assistant.

REPORT OF THE ASSISTANT HORTICULTURIST FOR THE YEAR, 1953.

To the Director of Agriculture:

I have the honour to submit my report for the year 1953.

Supervision of Farm Production

Periodic visits were made to contract farmers throughout the year and a list of growing vegetables prepared at each visit and submitted to the Marketing Officer. Farmers were advised as to the quantity of each vegetable to be produced under the terms of their contracts. A total of twenty-one days was spent in farm survey work or 228 actual farm visits were made.

Promotion of School Gardening

All secondary schools were visited at least once during the year, while those having gardening on their curriculum, were visited more frequently. Twenty schools were supplied with a suitable tree and plaque to commemorate the Coronation of Her Majesty Queen Elizabeth II in June.

A series of five lectures in Elementary Gardening were delivered at the Agricultural Station last autumn. A total attendance of 106 children proved these classes to be a great success.

FIELD EXPERIMENTS

FIVE YEAR FERTILIZER EXPERIMENT.

There has been a marked change in the results of the fourth cropping season of the five year fertilizer experiment.

Potatoes .

For three years a gradual increase in the yield of potatoes had been recorded for all three plots. There has been, this year, a decrease by exactly half of the previous year in the west plot. This plot has been fertilized with the balanced fertilizer, 4.12. 6 (See Table). A decrease is also noted in this years harvest for the centre plot which is being fertilized with farm yard manure (See Table), but in comparison, this decrease in yield is not as great as that of the first mentioned plot.

The East Plot, fertilized with castor pomace, shows an increase in harvest by approximately one quarter of the crops for the previous year.

Carrots .

The carrot crop for the 1952-53 season is almost the same as the crops for the year 1951-52 as far as the West and Centre plots are concerned. Yield in the East Plot has varied considerably during the four years, giving its lowest yield in the first year and highest yield in the second year of the experiment.

Cabbage.

Cabbage as well as ruta baga were not planted in the third year of this five year trial, due to the Easter lilies being planted in this area. The lilies were discarded due to a large amount of the virus, "Yellow Flat" being present.

During the three years which cabbage has been planted, this present year has shown a decrease in yield by approximately one half of each of the previous years crop. This applies to all three plots.

Ruta Baga.

This crop has not been planted for the last two years.

(See Appendix A)

Banana Experiment.

The banana experiment has now passed its second year of recorded weights, as is given in the table, (Appendix B.) There has been a great increase in the yield of bananas for 1953 over the previous year, as was to be expected in an experiment of this kind, but it must be noted that blocks 1X A and X are the only places where a decrease in yield below the previous year has been obtained. So far, as can be seen, seaweed and pig manure are giving higher yields of bananas than any of the other fertilizers. In future years, figures of the experiment may prove seaweed and pig manure give the best yields of bananas. However, nothing definite can be said for the experiment at present.

(See Appendix B)

Liaison.

No record was kept of the numerous private landowners who received horticultural advice, but it can be said here that this work occupied a great part of the writer's time during the planting season.

Lily Inspections.

Lily inspections were made in company with the Assistant Director, from whom the writer obtained his first instructions in this work. Two major inspections were made to cover every field of the commercial growers while several inspections were made of home flower beds at the request of their owners.

Supervision of Government Grounds.

The grounds of the Colonial Secretariat and Sessions House have been under my supervision from July 20 to October 28 when the Assistant Director was on foreign leave. After the Assistant Director's return to the Colony, these grounds were placed in my care permanently.

During the absence of the Agricultural Assistant, who was on foreign leave (August 3-September 26) the grounds of Government House and Bernard Park were placed under my supervision.

Reafforestation.

Although no set day of the week was reserved for work in the forestry division, the equivalent time of one day per week was spent there when the most opportune time presented itself. Quantities of seeds and cuttings were gathered from wherever available in the field and propagated in the Forestry division. Quantities of seeds of the following plants were collected while on two weeks vacation leave in Nassau and Jamaica:

Annona cherimola (Cherimoya); Annona squamosa (Sugar Apple); Blighia sapida (Akee); Hibiscus teliaceus (Mahoe); Melicocca bijuga (Spanish lime or Genip); Persea persea (Avocado). These are now growing successfully in the Forestry Division.

Test of Cardboard Containers.

A test was conducted to determine the value of using wax-covered cardboard containers as a pot for plants to substitute tin cans and clay pots. The cardboard containers, although attractive and light in weight, are not at all durable under local conditions. Within eight weeks after potting, the containers disintergrated to a point where they were unsafe to handle.

Rearing of Potato Tuber Moth (Gnarimschema compressus).

A small number of living tuber moths and larvae are being carried over by re-generation until the spring of 1954 when there is a possibility that parasites will be introduced and reared in an attempt to control the former pest.

Liberations of Parasites and Mealybug Predators.

All liberations of parasites and predators made by the writer have been recorded in the monthly reports of the Acting Plant Pathologist or laboratory assistant.

Survey of Photopthora infestans (Late blight of Potatoes)

An Island-wide survey was made to determine the amount of "Late Blight" in the potato crop. There was not a single incident where the symptoms of "Late Blight" were found.

Plant Interceptions.

Three separate shipments of plants growing in soil were confiscated and destroyed by burning, this being due to their illegal entry into the Colony.

Exhibitions .

An active part was taken in connection with both the Citrus Exhibition, held on January 8th, 9th and 10th and the nineteenth Agricultural Exhibition, held on April 22,23 and 24.

Leave .

Foreign leave was granted from September 19 to October 1, when the writer visited the West Indies.

Royal Visit .

Decorative work commenced five days prior to the arrival of Her Majesty Queen Elizabeth 11 and His Royal Highness The Duke of Edinburgh in Bermuda, and was continued, until the time of their arrival.

Respectfully submitted,

J.Hubert Jones,
Assistant Horticulturist.

March 12, 1954.

APPENDIX A

COMPARISON OF YIELDS PER ROD.

Crop	West Plot 47 sq rds 12 cwts. per acre 4.12.6				Centre Plot 47 sq rds 16 tons F.M.Y. per acre				East Plot 34 sq. rds 12 cwts. per acre Castor pomace			
	1949-50	1950-51	1951-52	1952-53	1949-50	1950-51	1951-52	1952-53	1949-50	1950-51	1951-52	1952-53
Potatoes	23 lbs	67 lbs	90 lbs	45 lbs	17 lbs	53 lbs	70 lbs	46½ lbs	18 lbs	50½ lbs	74 lbs	32 lbs
Carrots	127½ "	163 "	115 "	116 "	111 "	135 "	94 "	91 "	79½ "	229 "	80 "	148 "
Cabbage	141 "	141 "	X	62 "	150 "	93 "	X	34 "	129 "	156 "	X	60
Ruta Baga	137 "	104 "	X	X	98 "	75 "	X	X	133½"	63 "	X	X

X = Not Planted

APPENDIX B

FIVE YEAR FERTILIZER EXPERIMENT ON BANANAS

			Equiv per acre			Equiv per acre	Total Yield 1952		Equiv per acre 1952	Total Yield 1953		Equiv per acre 1953
1	36	lbs	4.12.6	½ Ton			158	lbs.	10,800	117	lbs.	7,800
1A	72	"	4.12.6	1 "			183	"	12,000	333	"	22,200
11	720	"	Seaweed	10 "			219	"	14,400	290	"	19,300
11A	1440	"	"	20 "			210	"	13,800	511	"	34,060
111	36	"	C.pomace	½ "			117	"	7,800	233	"	15,530
111A	72	"	" "	1 "			175	"	11,400	189	"	1,260
1V	720	"	P.manure	10 "			100	"	6,600	115	"	7,600
1VA	1440	"	" "	20 "			77	"	4,800	428	"	28,530
V	-		No "	- -			-	-	-	221	"	14,730
VA	-		" "	- -			65	lbs	4,200	283	"	18,860
V1	720	"	Seaweed	10 Ton & 18 lbs		4.12.6 ½Ton	18	"	3,600	319	"	21,260
V1A	1440	"	"	20 " " 36 "		4.12.6 ½ "	33	"	2,100	572	"	38,130
V11	720	"	P.manure	10 " " 18 "		4.12.6 ¼ "	58	"	3,600	392	"	26,130
V11A	1440	"	" "	20 " " 36 "		4.12.6 ½ "	61	"	4,200	553	"	36,860
V111	720	"	Seaweed	10 " " 18 "		C.pomace ¼ Ton	75	"	4,800	199	"	13,260
V111A	1440	"	"	20 " " 36 "		" " ½Ton	108	"	7,200	351	"	23,400
1X	720	"	P.manure	10 " " 18 "		" " ¼ "	89	"	6,000	365	"	24,200
1XA	1440	"	" "	20 " " 36 "		" " ½ "	352	"	23,400	280	"	18,660
X	720	"	C. "	10 " - -	- -	- - - -	207	"	13,800	100	"	6,000
XA	144	"	" "	20 " - -	- -	- - - -	219	"	14,400	285	"	19,000

C.pomace = Castor pomace
C.manure = Cow manure
P.manure = Pig manure

REPORT OF THE REAFFORESTATION OFFICER

FOR THE YEAR 1953.

To the Director of Agriculture:

I have the honour to submit my report for the year ending the 31st. of December, 1953.

The writer took up his position with the Department of Agriculture at the end of January, 1953 and the following is a summary of the work with which he has been mainly concerned:-

PROPAGATION.

Seed Sowing

Periodic sowings of Casuarina equisetifolia (Whistling Pine) have been made throughout the year. Comparatively large sowings of Coccoloba uvifera (Bay Grape), Cordia sebestena (Scarlet Cordia), Sabal bermudana (Bermuda Palmetto), Juniperus bermudiana (Bermuda Cedar), Araucaria excelsa (Norfolk Island Pine) and Grevillea robusta (Australian Silky Oak) were also made. Seed for the various flower bedding schemes was sown at the appropriate times throughout the year. Smaller sowings of assorted seeds were also made. These came from the University Botanic Garden, Oxford; the Royal Botanic Gardens, Kew; Nairobi, Kenya and Homestead, Florida.

Cuttings

Large quantities of Ligustrum lucidum (Giant Privet), Viburnum suspensum, V. odoratissimum, Holmskioldia sanguinea (Chinese Hat Plant), Podocarpus macrophylla (Giant Yew) and Ficus nitida (Indian Laurel) were propagated. Smaller quantities of Senecio confusus (Mexican Flame Vine), Plumbago capensis, Oleo europaea (Olive), Carissa grandiflora (Natal Plum), Abelia grandiflora and Hibiscus and Oleander varieties were also propagated. The soil heating apparatus in the greenhouse has been repaired and is again in operation. It is hoped to install similar equipment on the other side of the house.

Budding of Citrus Fruits

Various types of citrus fruits were budded in the early part of the year. The percentage of buds which eventually grew was disappointingly low -- only ten per cent. This is felt to be due to a number of factors, such as

(1) Uncovering the bud too early, thus causing it to dry out,
(2) Keeping the bud covered too long, thus allowing fungous growth to be encouraged,
(3) Cutting back the stock at too late a date after budding, and
(4) Absence of water at critical periods.

It is intended to bud some more stocks in 1954 and it is to be hoped that the results will be more satisfactory.

Potting of Plants

The various seedlings and rooted cuttings resulting from operations carried out under sub-headings (Seed Sowing' and (Cuttings' were potted off. In addition, seedlings of Elaeodendron laneanum (Olive-wood Bark), Auracaria excelsa (Norfolk Island Pine), Sabal bermudana (Bermuda Palmetto), Poinciana regia, Agave americana, Terminalia catappa (West Indian Almond), Calophyllum calaba (Galba) and Pittosporum tobira were collected from various gardens and were potted off. A total of 7,500 plants came in from the Hope Gardens, Jamaica and all these, with the exception of 1,500 Casuarinas were potted . The Casuarinas were planted out on the Mid-Ocean Golf Club property.

SPRAYING AND DUSTING

Routine sprayings of flower plants and shrubs were carried out with such insecticides and fungicides as Sulphur, Du Pont's Aphid and Mite Spray, Halodane (Chlordane), Vegetable Garden Dust and Bordeaux Mixture.

MISCELLANEOUS

Distribution of Plants to Commemorate the Coronation of Her Majesty Queen Elizabeth 11.

This work was carried out up to the beginning of June. Ninety trees and shrubs in tins were sent out to each Arbour Society, for distribution to the public. In addition to these, many people collected their plants direct from the Station.

Visit of Her Majesty Queen Elizabeth 11 and His Royal Highness the Duke of Edinburgh.

A considerable amount of time was well spent on preparations for this visit. A carpet bed consisting of a crown and the letters E.11.R. was designed and laid out. Eleven hundred gladioli were planted in order to provide flowers for the decoration of Government House and various other places and plants in tins were despatched for decorations at the Civil Air Terminal.

Development of Colonial Government Land at St.Georges.

Slow but sure strides have been made in the reclamation of this land. In all, approximately two hundred trees and shrubs have been planted, including Poinciana regia, Araucaria excelsa, Casuarina equisetifolia, Tamarindus indica, Phoenix canariensis, Sabal bermudana, Ficus nitida, Podocarpus macrophylla, Albizzia lebbek, Juniperus silicicola and Juniperus bermudiana. A large number of plants such as Acalypha and Nerium oleander varieties, has been propagated vegetatively in situ.

Advisory Visits

Forty-six of these visits were made this year.

Sale of Plants Etc.

The number of plants sold and donated this year was 12,406 and 4000 respectively. Roadside Planting Schemes were carried out, using 1,148 plants. Plants distributed for the Coronation and the Royal Visit amounted to 367, making a grand total of 17,921.

Respectfully submitted,

Gordon S.G.Scott,
Reafforestation Officer.

REPORT OF THE GOVERNMENT MARKETING OFFICER
FOR THE YEAR 1953.

To the Director of Agriculture:

I have the honour to submit my report on the management of the Government Cold Storage Plant and on the Wholesale Marketing Centre during the year 1953.

Due to good growing conditions and exceptionally large yields, the business transacted through the Marketing Centre broke all previous records. This in turn also created quite a problem with regards to storing, especially with potatoes. As sufficient cold storage was not available from April to September, quite a number of potatoes were infected by tuber moth, consequently, there was a loss.It will also be noted that not many summer crops such as pumpkin, melons, canteloupes etc. were marketed through the Marketing Centre due to insufficient funds being available for this purpose.

The following quantities of farm produce were marketed through the Wholesale Marketing Centre:

Beets	14,355	lbs
Cabbage	62,055	"
Carrots	141,518	"
Tomatoes	84,117	"
Onions	107,433	"
Spring Onions	10,812	"
Potatoes	829,650	"
Broccoli	4,670	"
Cauliflower	13,293	"
Celery	6,500	"
Parsley	138	doz.
Lettuce	1841	"
Radishes	5	"
Peppers	194	"
Turnips	3480	lbs
Strawberries	2484	qts
Beans	13,145	lbs
Pumpkin	5,885	"
Squash	63	"
Bananas	11,775	"
S.Potatoes	10,145	"
Peas	65	"

Lemons	4615	lbs	Citrus
Grapefruit	16395	"	
Oranges	875	"	
Limes	126	"	
Tangerines	100	"	
Corn	852	doz	
Cucumbers	122	"	
Eggs	249	"	
Vegetable Marrow	122	lbs	
Egg Plant	65	"	
Cassava	691	"	

Remarks

Potatoes Record yields were harvested from both crops.The fall crop was planted late and was dug mainly in January and February and some in March. With the spring crop coming in, there was a glut on the market. Several attempts to find markets in the West Indies met with no success.

Cabbage The crop was heavy and the quality good, there was some loss due to deterioration. With less acreage and a more uniform source of supply, this loss could be somewhat offset.

Tomatoes The supply was steady from January to July with January and June being the two peak months.

Bananas Due to adverse weather conditions, the sale of this commodity has fallen off considerably.

Onions With large yields and no markets available elsewhere, the market was glutted. The Bermuda onion is not a good keeper. It deteriorates rapidly after the middle of August.

Cauliflower A good year for this commodity. The supply was steady and the quality was excellent. The two peak months were January and April.

Citrus Fruits The crop was heavy and of good quality with January showing the largest supply.

Shipment of Vegetables A number of shipments of carrots and beets were made to the West Indies to relieve the market here from time to time. These shipments met with amazing success.

Plant Maintenance Maintenance of the Plant is undertaken by special agreement with the Bermuda Trading Company. The work was carried out to my entire satisfaction. No. 3 Chill Room had one new motor installed.

Grading and Marketing With the spring crop of potatoes, a new scheme was tried out with very good results. They were graded into two sizes, No. 1's and No. 2's being put up in separate containers.

Better results would also follow if more care was taken with regard to harvesting carrots in bunches. A little more attention to sizing of carrots and also in making the bunch a trifle larger would result in a better looking package for sale.

Tomatoes, on the whole, were graded fairly well but here again, a little more care could be taken.

Respectfully submitted,

Francis Carlyle Hollis
Government Marketing Officer.